AMENDMENTS TO THE CLAIMS

The following listing of claims will replace all prior versions and listings of claims in the application.

LISTING OF CLAIMS

1. (previously presented) An architectural arrangement for launching an optical system signal into an optical transport network, the optical system signal being constituted in a layered membership relationship that defines at least two optical layers, comprising:

an optical transport line residing in the optical transport network and operable to carry the optical system signal therein;

a multiplexing component connected to the optical transport line, the multiplexing component operable to receive a plurality of optical data signals therein, combine the plurality of optical data signals to form the optical system signal, and launch the optical system signal into the optical transport line; and

a plurality of signal impairment compensation mechanisms associated with the multiplexing component, the plurality of signal impairment compensation mechanisms operable across each of the optical layers of the optical system signal to perform a signal impairment compensation operation on each of the optical signals therein, where the signal impairment compensation operation includes dynamic gain flattening, optical transient suppression and dispersion compensation.

2. (cancel)

3. (original) The architectural arrangement of Claim 1 wherein the multiplexing component further comprises a set of multiplexers operable to receive the plurality of optical data signals and combine the plurality of optical data signals to form a plurality of intermediate optical signals, and a system level multiplexer operable to receive the plurality of intermediate optical signals and combine the plurality of intermediate optical signals to form the optical system signal.

4. (original) The architectural arrangement of Claim 3 wherein at least one signal impairment compensation mechanism is positioned at one or more inputs associated with the set of multiplexers, at one or more inputs to the system level multiplexer, and at an output of the system level multiplexer.

5. (previously presented) A method for transporting optical signals in an optical transport network, comprising:

receiving a plurality of optical data signals;

performing signal impairment compensation on each of the plurality of optical data signals, where the signal impairment compensation includes dynamic gain flattening, optical transient suppression and dispersion compensation;

selectively combining the plurality of optical data signals to form a plurality of intermediate optical signals;

performing signal impairment compensation on each of the plurality of intermediate optical signals, where the signal impairment compensation includes

dynamic gain flattening, optical transient suppression and dispersion compensation;

combining the plurality of intermediate optical signals to form an optical system signal; and

launching the optical system signal into the optical transport network.

6. (original) The method of Claim 5 further comprising the steps of:

separating the optical system signal into the plurality of intermediate optical signals at a network switching site associated with the optical transport network, the network switching site interconnecting a plurality of optical transport lines; and

routing at least one of the plurality of intermediate optical signals to one of the plurality of optical transport lines.

7. (original) The method of Claim 6 wherein the step of routing at least one of the plurality of intermediate optical signals further comprises using an optical switch residing at the network switching site.

8. (original) The method of Claim 6 wherein the step of routing at least one of the plurality of intermediate optical signals further comprises manually routing the at least one intermediate optical signal without the use of a switch to a multiplexer residing at the network switching site.

9. (original) The method of Claim 6 further comprising the steps of:

separating remaining intermediate optical signals into a plurality of remaining optical data signals;

routing the plurality of remaining optical data signals to a plurality of optical switches residing at the network switching site.

10. (cancel)

11. (original) The method of Claim 5 wherein the step of launching the optical system signal further comprises performing signal impairment compensation on the optical system signal.

12. (previously presented) A layered network architecture for use in an optical transport network, comprising:

a first optical transport line operable to carry an optical system signal therein, the optical system signal being constituted in a layered membership relationship from a plurality of optical data signals;

a second optical transport line operable to carry the optical system signal therein;

a third optical transport line operable to carry the optical system signal therein; and

a network switching site interconnecting the first optical transport line, the second optical transport line and the third optical transport line, where the network switching site includes

a demultiplexing component connected to the first optical transport line, the demultiplexing component operable to receive the optical system signal and to separate the optical system signal into a plurality of optical band signals;

a band level optical switch adapted receive at least one of the optical band signals from the demultiplexing component and operable to route the at least one of the optical band signals amongst the second and third optical transport lines;

a band level demultiplexing component adapted to receive optical band signals from the demultiplexing component and operable to separate the optical band signals into a plurality of optical sub-band signals;

a sub-band level optical switch adapted to receive optical sub-band signals from the band level optical switch and the sub-band level demultiplexing component and operable to route at least one of the optical sub-band signals amongst the second and third optical transport lines;

a sub-band level demultiplexing component adapted to receive optical sub-band signals from the band level demultiplexing component and operable to separate the optical sub-band signals into a plurality of optical wavelength signals; and

a wavelength level optical switch adapted to receive optical wavelength signals from the sub-band level optical switch and the sub-band level demultiplexing component and operable to route at the optical wavelength signals amongst the second and third optical transport lines.

13. (original) The layered network architecture of Claim 12 further comprising a multiplexing component associated with at least one of the second optical transport line and the third optical transport line, where at least one of the plurality of optical band signals is manually routed without the use of a switch from the demultiplexing component to the multiplexing component.

14. (cancel)

15. (currently amended) The layered network architecture of Claim 12 ~~14~~ further comprising a sub-band level multiplexing component associated with at least one of the second optical transport line and the third optical transport line, where at least one of the plurality of optical sub-band signals is manually routed without the use of a switch from the sub-band level demultiplexing component to the sub-band level multiplexing component.

16. (cancel)

17. – 26. (cancel)